# Fruit data

```
ls
```

```
sample_data/
```

In [2]:

```
pwd
```

Out[2]:

```
'/content'
```

In [3]:

```
from tensorflow.keras.preprocessing.image import ImageDataGenerator
```

In [4]:

```
train_datagen=ImageDataGenerator(rescale=1./255,zoom_range=0.2,horizontal_f
lip=True,vertical_flip=False)
```

In [5]:

```
test_datagen=ImageDataGenerator(rescale=1./255)
```

In [6]:

```
ls
```

```
sample_data/
```

In [23]:

```
x_train=train_datagen.flow_from_directory('/content/drive/MyDrive/Classroom
/Dataset Plant Disease/fruit-dataset/fruit-dataset/train',
class_mode='categorical',batch_size=24)
```

```
Found 56 images belonging to 6 classes.
```

In [24]:

```
x_test=test_datagen.flow_from_directory('/content/drive/MyDrive/Classroom/D
ataset Plant Disease/fruit-dataset/fruit-dataset/test',
class_mode='categorical',batch_size=24)
```

```
Found 154 images belonging to 6 classes.
```

In [25]:

```
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import
Dense,Convolution2D,MaxPooling2D,Flatten
```

In [26]:

```
model=Sequential()
```

In [27]:

```
model.add(Convolution2D(32,(3,3),input_shape=(128,128,3),activation='relu')
)
```

In [28]:

```
model.add(MaxPooling2D(pool_size=(2,2)))
model.add(Flatten())
model.summary()
```

```
Model: "sequential_1"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 conv2d_1 (Conv2D)           (None, 126, 126, 32)      896

 max_pooling2d_1 (MaxPooling  (None, 63, 63, 32)       0
 2D)
```

```
 flatten_1 (Flatten)         (None, 127008)            0

=================================================================
Total params: 896
Trainable params: 896
Non-trainable params: 0
_________________________________________________________________
```

In [29]:

```
32*(3*3*3+1)
model.add(Dense(300,activation='relu'))
model.add(Dense(150,activation='relu'))
```

In [30]:

```
model.add(Dense(6,activation='softmax'))
model.compile(loss='categorical_crossentropy',optimizer='adam',metrics=['ac
curacy'])
len(x_train)
```

Out[30]:

```
3
```

In [31]:

```
1238/24
```

Out[31]:

```
51.583333333333336
```

In [32]:

```
model.fit(x_train,steps_per_epoch=len(x_train),validation_data=x_test,valid
ation_steps=len(x_test),epochs=10)
```

```
Epoch 1/10
---------------------------------------------------------------------------
InvalidArgumentError                      Traceback (most recent call last)
 in
----> 1 model.fit(x_train,steps_per_epoch=len(x_train),validation_data=x_te
st,validation_steps=len(x_test),epochs=10)

/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_utils.py in er
ror_handler(*args, **kwargs)
     65     except Exception as e:  # pylint: disable=broad-except
     66       filtered_tb = _process_traceback_frames(e.__traceback__)
---> 67       raise e.with_traceback(filtered_tb) from None
     68     finally:
     69       del filtered_tb

/usr/local/lib/python3.7/dist-packages/tensorflow/python/eager/execute.py i
n quick_execute(op_name, num_outputs, inputs, attrs, ctx, name)
     53     ctx.ensure_initialized()
     54     tensors = pywrap_tfe.TFE_Py_Execute(ctx._handle, device_name, o
p_name,
---> 55                                         inputs, attrs, num_outputs)
     56   except core._NotOkStatusException as e:
     57     if name is not None:

InvalidArgumentError: Graph execution error:

Detected at node 'sequential_1/flatten_1/Reshape' defined at (most recent c
all last):
    File "/usr/lib/python3.7/runpy.py", line 193, in _run_module_as_main
```

```
      "__main__", mod_spec)
    File "/usr/lib/python3.7/runpy.py", line 85, in _run_code
      exec(code, run_globals)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py", li
ne 16, in
      app.launch_new_instance()
    File "/usr/local/lib/python3.7/dist-packages/traitlets/config/applicati
on.py", line 846, in launch_instance
      app.start()
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/kernelapp.py", l
ine 612, in start
      self.io_loop.start()
    File "/usr/local/lib/python3.7/dist-packages/tornado/platform/asyncio.p
y", line 132, in start
      self.asyncio_loop.run_forever()
    File "/usr/lib/python3.7/asyncio/base_events.py", line 541, in run_fore
ver
      self._run_once()
    File "/usr/lib/python3.7/asyncio/base_events.py", line 1786, in _run_on
ce
      handle._run()
    File "/usr/lib/python3.7/asyncio/events.py", line 88, in _run
      self._context.run(self._callback, *self._args)
    File "/usr/local/lib/python3.7/dist-packages/tornado/ioloop.py", line 7
58, in _run_callback
      ret = callback()
    File "/usr/local/lib/python3.7/dist-packages/tornado/stack_context.py",
line 300, in null_wrapper
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 1233
, in inner
      self.run()
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 1147
, in run
      yielded = self.gen.send(value)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/kernelbase.py",
line 365, in process_one
      yield gen.maybe_future(dispatch(*args))
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 326,
in wrapper
      yielded = next(result)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/kernelbase.py",
line 268, in dispatch_shell
      yield gen.maybe_future(handler(stream, idents, msg))
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 326,
in wrapper
      yielded = next(result)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/kernelbase.py",
line 545, in execute_request
      user_expressions, allow_stdin,
    File "/usr/local/lib/python3.7/dist-packages/tornado/gen.py", line 326,
in wrapper
      yielded = next(result)
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/ipkernel.py", li
ne 306, in do_execute
      res = shell.run_cell(code, store_history=store_history, silent=silent
)
```

```
    File "/usr/local/lib/python3.7/dist-packages/ipykernel/zmqshell.py", li
ne 536, in run_cell
      return super(ZMQInteractiveShell, self).run_cell(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/IPython/core/interactivesh
ell.py", line 2855, in run_cell
      raw_cell, store_history, silent, shell_futures)
    File "/usr/local/lib/python3.7/dist-packages/IPython/core/interactivesh
ell.py", line 2881, in _run_cell
      return runner(coro)
    File "/usr/local/lib/python3.7/dist-packages/IPython/core/async_helpers
.py", line 68, in _pseudo_sync_runner
      coro.send(None)
    File "/usr/local/lib/python3.7/dist-packages/IPython/core/interactivesh
ell.py", line 3058, in run_cell_async
      interactivity=interactivity, compiler=compiler, result=result)
    File "/usr/local/lib/python3.7/dist-packages/IPython/core/interactivesh
ell.py", line 3249, in run_ast_nodes
      if (await self.run_code(code, result,  async_=asy)):
    File "/usr/local/lib/python3.7/dist-packages/IPython/core/interactivesh
ell.py", line 3326, in run_code
      exec(code_obj, self.user_global_ns, self.user_ns)
    File "", line 1, in
      model.fit(x_train,steps_per_epoch=len(x_train),validation_data=x_test
,validation_steps=len(x_test),epochs=10)
    File "/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_util
s.py", line 64, in error_handler
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1409, in fit
      tmp_logs = self.train_function(iterator)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1051, in train_function
      return step_function(self, iterator)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1040, in step_function
      outputs = model.distribute_strategy.run(run_step, args=(data,))
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1030, in run_step
      outputs = model.train_step(data)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 889, in train_step
      y_pred = self(x, training=True)
    File "/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_util
s.py", line 64, in error_handler
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 490, in __call__
      return super().__call__(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_util
s.py", line 64, in error_handler
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/base_layer.py
", line 1014, in __call__
      outputs = call_fn(inputs, *args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_util
s.py", line 92, in error_handler
      return fn(*args, **kwargs)
```

```
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/sequential.py
", line 374, in call
      return super(Sequential, self).call(inputs, training=training, mask=m
ask)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/functional.py
", line 459, in call
      inputs, training=training, mask=mask)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/functional.py
", line 596, in _run_internal_graph
      outputs = node.layer(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_util
s.py", line 64, in error_handler
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/base_layer.py
", line 1014, in __call__
      outputs = call_fn(inputs, *args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_util
s.py", line 92, in error_handler
      return fn(*args, **kwargs)
    File "/usr/local/lib/python3.7/dist-packages/keras/layers/reshaping/fla
tten.py", line 98, in call
      return tf.reshape(inputs, flattened_shape)
Node: 'sequential_1/flatten_1/Reshape'
Input to reshape is a tensor with 4129024 values, but the requested shape r
equires a multiple of 127008
         [[{{node sequential_1/flatten_1/Reshape}}]] [Op:__inference_train_
function_1926]
```

In [33]:

```
model.save('fruitdata.h5')
```

In [34]:

```
import numpy as np
from tensorflow.keras.models import load_model
from tensorflow.keras.preprocessing import image
```

In [35]:

```
model=load_model('fruitdata.h5')
```

In [36]:

```
img=image.load_img('/content/drive/MyDrive/Classroom/Dataset Plant
Disease/fruit-dataset/fruit-
dataset/train/Corn_(maize)___Northern_Leaf_Blight/10b05173-08e7-4470-a581-
a64898a6af88___RS_NLB 3799.JPG')
```

In [37]:

```
img
```

Out[37]:

In [38]:

```
img=image.load_img('/content/drive/MyDrive/Classroom/Dataset Plant
Disease/fruit-dataset/fruit-dataset/train/Peach___Bacterial_spot/9a078cfa-
5766-47c5-9bc0-021ba1495045___Rut._Bact.S 0790.JPG')
img
```

Out[38]:

In [39]:

```
x=image.img_to_array(img)
```

In [40]:

```
x
```

Out[40]:

```
array([[[187., 186., 220.],
        [171., 170., 204.],
        [157., 156., 190.],
        ...,
        [ 68.,  66., 106.],
        [ 92.,  89., 132.],
        [ 92.,  89., 132.]],

       [[168., 167., 201.],
        [157., 156., 190.],
        [150., 149., 183.],
        ...,
```

```
         [ 69.,  67., 106.],
         [ 99.,  97., 137.],
         [ 83.,  80., 123.]],

        [[161., 160., 194.],
         [156., 155., 189.],
         [152., 151., 185.],
         ...,
         [ 96.,  94., 131.],
         [111., 109., 148.],
         [ 63.,  61., 101.]],

        ...,

        [[140., 143., 178.],
         [140., 143., 178.],
         [139., 142., 177.],
         ...,
         [ 74.,  73., 105.],
         [ 75.,  74., 106.],
         [ 72.,  71., 103.]],

        [[139., 142., 177.],
         [140., 143., 178.],
         [140., 143., 178.],
         ...,
         [ 93.,  92., 124.],
         [ 88.,  87., 119.],
         [ 79.,  78., 110.]],

        [[137., 140., 175.],
         [139., 142., 177.],
         [141., 144., 179.],
         ...,
         [ 90.,  89., 121.],
         [ 79.,  78., 110.],
         [ 63.,  62.,  94.]]], dtype=float32)
```

In [ ]:

```
x=np.expand_dims(x,axis=0)
```

In [41]:

```
x
```

Out[41]:

```
array([[[187., 186., 220.],
         [171., 170., 204.],
         [157., 156., 190.],
         ...,
         [ 68.,  66., 106.],
         [ 92.,  89., 132.],
         [ 92.,  89., 132.]],

        [[168., 167., 201.],
         [157., 156., 190.],
         [150., 149., 183.],
         ...,
         [ 69.,  67., 106.],
         [ 99.,  97., 137.],
```

```
        [ 83.,  80., 123.]],

       [[161., 160., 194.],
        [156., 155., 189.],
        [152., 151., 185.],
        ...,
        [ 96.,  94., 131.],
        [111., 109., 148.],
        [ 63.,  61., 101.]],

       ...,

       [[140., 143., 178.],
        [140., 143., 178.],
        [139., 142., 177.],
        ...,
        [ 74.,  73., 105.],
        [ 75.,  74., 106.],
        [ 72.,  71., 103.]],

       [[139., 142., 177.],
        [140., 143., 178.],
        [140., 143., 178.],
        ...,
        [ 93.,  92., 124.],
        [ 88.,  87., 119.],
        [ 79.,  78., 110.]],

       [[137., 140., 175.],
        [139., 142., 177.],
        [141., 144., 179.],
        ...,
        [ 90.,  89., 121.],
        [ 79.,  78., 110.],
        [ 63.,  62.,  94.]]], dtype=float32)
```

In [46]:

```
y=np.argmax(model.predict(x),axis=1)
```

```
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
 in
----> 1 y=np.argmax(model.predict(x),axis=1)

/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_utils.py in er
ror_handler(*args, **kwargs)
     65     except Exception as e:  # pylint: disable=broad-except
     66       filtered_tb = _process_traceback_frames(e.__traceback__)
---> 67       raise e.with_traceback(filtered_tb) from None
     68     finally:
     69       del filtered_tb

/usr/local/lib/python3.7/dist-packages/keras/engine/training.py in tf__pred
ict_function(iterator)
     13                 try:
     14                     do_return = True
---> 15                     retval_ = ag__.converted_call(ag__.ld(step_func
tion), (ag__.ld(self), ag__.ld(iterator)), None, fscope)
```

```
     16                 except:
     17                     do_return = False

ValueError: in user code:

    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1845, in predict_function  *
        return step_function(self, iterator)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1834, in step_function  **
        outputs = model.distribute_strategy.run(run_step, args=(data,))
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1823, in run_step  **
        outputs = model.predict_step(data)
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/training.py",
line 1791, in predict_step
        return self(x, training=False)
    File "/usr/local/lib/python3.7/dist-packages/keras/utils/traceback_util
s.py", line 67, in error_handler
        raise e.with_traceback(filtered_tb) from None
    File "/usr/local/lib/python3.7/dist-packages/keras/engine/input_spec.py
", line 264, in assert_input_compatibility
        raise ValueError(f'Input {input_index} of layer "{layer_name}" is '

    ValueError: Input 0 of layer "sequential_1" is incompatible with the la
yer: expected shape=(None, 128, 128, 3), found shape=(32, 256, 3)
```

In [43]:

```
x_train.class_indices
```

Out[43]:

```
{'Apple___Black_rot': 0,
 'Apple___healthy': 1,
 'Corn_(maize)___Northern_Leaf_Blight': 2,
 'Corn_(maize)___healthy': 3,
 'Peach___Bacterial_spot': 4,
 'Peach___healthy': 5}
```

In [47]:

```
index=['Apple__Black_rot','Apple_healthy','Corn(maize)__Northern_Leaf_Bligh
t','Corn(maize)___healthy']
```

In [ ]:

```
index[y[0]]
```

In [ ]:

```
img=image.load_img('/content/drive/MyDrive/Classroom/Dataset Plant
Disease/Veg-dataset/Veg-dataset/train_set/Pepper,_bell___healthy/0119205b-
cfac-4322-be37-dcc401fcfa11___JR_HL 8527.JPG')
x=image.img_to_array(img)
x=np.expand_dims(x,axis=0)
y=np.argmax(model.predict(x),axis=1)
index=['Pepper,_bell_Bacterial_spot','Pepper,_bell_healthy','Potato_Early_b
light','Potato_Late_blight','Potato_healthy','Tomato_Bacterial_spot','Tomat
o_Leaf_Mold','Tomato__Septoria_leaf_spot']
index[y[0]]
```

In [ ]: